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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/274,152	03/22/1999	JEFFREY S. MCVEIGH	42390.P7110	8051

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EXAMINER	
VO, TUNG T	

ART UNIT	PAPER NUMBER
2613	

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/274,152	MCVEIGH ET AL.	
	Examiner	Art Unit	
	Tung Vo	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *03* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 12, 18, and 20 filed 7/15/2005 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Igarashi et al. (US 5,539,466) in view of Ju (US 5,801,778).

Re claims 1, 12, 18 and 20, Igarashi discloses an apparatus comprising: a motion estimation circuit (20, 21 and 22 of fig.1) to receive a stream of data comprising at least an anchor frame and a predicted frame, and to utilize even-parity field prediction to unidirectional predict (col. 10, lines 58-67) content of each of a plurality of fields of the predicted frame from corresponding fields of only a temporally closest anchor frame in the stream of data (figs. 7-12, e.g. predicting a frame using unidirectional predict content each of a plurality of fields (odd fields or even fields), wherein the storage medium or computer comprises a plurality instructions to execute the function above.

It is noted that Igarashi does not particularly teach the unidirectional predicted frame composes a fame that is defined as a bi-directionally predicted frame according to an encoding protocol for the stream of data using only unidirectional prediction as claimed.

However, Ju suggests B frames can contain macroblocks which are (a) intracoded, (b) unidirectional forward predictive coded, (c) unidirectional backward predictive coded using temporal encoding relative to a subsequent reference frame, **or (d)** bidirectionally predictive coded using temporal encoding relative to both previous and subsequent reference frames. A B frame macroblock may be predicted from a macroblock of an I frame or a P frame, but no predictions are made from B frame macroblocks, particularly for this case Ju would obviously use (b) unidirectional forward predictive coded or (c) unidirectional backward predictive coded using temporal encoding relative to a subsequent reference frame to predict a B frames in a field prediction mode (MPEG-2 standard encoder, see col. 2, lines 17-50).

Therefore, taking the teachings of Igarashi and Ju as a whole, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of Ju into the apparatus of Igarashi to predict the B frame using the unidirectional of the closet anchor frame. Doing so would allow the apparatus to reduce the computation requirements and improve the coding efficiency.

Re claims 2 and 15, Igarashi further teaches wherein the motion estimation circuit predicts content of a first in the predicted frame from content of a corresponding first field in the anchor frame and a first field motion vector, and predicts content of a second field in the predicted frame from a corresponding second field and a second field motion vector (McoPe, McePo of fig. 10A).

Re claim 3 and 14, Igarashi further teaches wherein the motion estimation circuit measures activity content within each of the plurality of fields of the anchor frame to generate a corresponding plurality of motion vectors (figs. 11, e.g. BMVoBo, MvePo...)

Re claims 4 and 13, Igarashi further teaches wherein the anchor frames used either precede or supersede the predicted frame depending on predicted frame type (figs. 10(A), 10(B), and 11; e.g. MCP, FMVB, MP, BMVB, SMVI, SMVP).

Re claims 5 and 16, Igarashi further teaches wherein the predicted frame and anchor frame are comprised of interlaced video content (figs. 5(A)- 5(C), wherein a first field of each of the predicted frame and the anchor frame contain even-field interlaced video content, while a second field of each of the predicted fame and the anchor frame contain odd-field interlaced video content (fig. 7, ODD FIELD AND EVEN FIELD).

Re claim 6, Igarashi further teaches wherein a first field of the predicted frame and the anchor frame comprises even-field content of the interlaced video content, and a second field of the predicted frame and the anchor frame comprises odd-field content of the interlaced video content (fig. 7)

Re claim 7, Igarashi further teaches wherein a first field of the predicted frame comprises even-field content of the interlaced video content and a first field of the anchor frame comprises odd-field content of the interlaced video content (Ie to Pe of figs. 10(A) and 10(B)).

Re claim 8, Igarashi further teaches wherein a first field of the predicted frame comprises odd-field content of the interlaced video content and a first field of the anchor frame comprises even-field content of the interlaced video content (Io to Pe of figs. 10 (A) and 10(B)).

Re claims 9 and 17, Igarashi further teaches wherein motion estimation circuit generates a motion vector for each of a first and second field of the predicted frame by measuring a sum of absolute activity differences in a corresponding first and second field of the anchor frame (22 and 21 of fig. 1, e.g. a frame motion detection circuit 22 and a field motion detection circuit 21, which serve as motion detection means for detecting, every macro block, motion vectors between frames and a sum of differences of absolute values of respective pixels, and for detecting, every macro block, motion vectors between fields obtained by dividing a frame in dependency upon odd and even scans of pixels and a sum of differences between absolute values of pixels, respectively)

Re claim 10, Igarashi further discloses wherein even-field interlaced video content of the predicted frame is predicted from even-field interlaced video content of the anchor frame, and odd-field interlaced video content of the predicted frame is predicted from odd-field interlaced video content of the anchor frame (figs, 10(A), e.g. MCePe, McoPo).

Re claims 11 and 19, Igarashi further teaches wherein the even-field interlaced video content of the predicted frame is predicted from the even-field interlaced video content of the anchor frame and a motion vector (figs. 10(A), 20(B) and 11), wherein the motion vector is determined by measuring a sum of absolute differences within the even-field interlaced video content of the anchor frame (21 and 22 of fig. 1).

Re claims 24-31, see analysis in claims 1-5, and 9-11.

Re claims 21-23 and 32-37, Igarashi further teaches MPEG standard contains I, B, P frames and the anchor frame is one of an I-frame or a P-frame (cols. 17-20).

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Krause (US 5,565,922) discloses a motion compensation for interlaced digital video signal.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tung Vo whose telephone number is 571-272-7340. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris. Kelley can be reached on 571-272-7331. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tung Vo
Primary Examiner
Art Unit 2613